Bacteria isolated from gastrointestinal tracts of wild fish as potential probiotics with antagonistic effects against fish and human pathogens.

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Solutions are urgently required for the growing number of infections caused by antibiotic-resistant bacteria and several alternative strategies such as probiotic bacteria have been suggested. The selection of probiotics requires various *in vitro* screening experiments for the production of antagonist compounds towards pathogens. In this study, a total of one hundred and twenty nine strains were isolated from different marine fish species (from the Cantabrian Sea coast) in MRS or TSB medium supplemented with 1.5% NaCl. A bacterial growth inhibition study to test for the production of antimicrobial metabolites by the isolates was performed using twenty strains of Gram positive or Gram negative pathogens: *Aeromonas hydrophila*, *Streptococcus iniae*, *Yersinia ruckeri*, *Staphylococcus aureus*, *Acinetobacter* spp., *Enterobacter* spp., *Listeria monocytogenes*, *Serratia liquefaciens* and *Corynebacterium* spp.

Seven Gram-positive, non-motile candidate probiotics showed antagonistic activity against at least two pathogens. The pathogens *A. hydrophila*, *Y. ruckeri* and *S. aureus* had the highest number of antagonists (5, 3 and 5 respectively). Candidate probiotic 17.3 showed the greatest antagonistic activity, inhibiting five of the pathogens. Interestingly, three candidate probiotics showed high antagonistic activity against a methicillin resistant *Staphylococcus aureus* (MRSA) strain. These results showed that some of the selected probiotic candidates could be considered as potential probiotic strains against fish or human pathogens.